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Marlene H. Dortch
Office of the Secretary,
Federal Communications Commission,
445 12th Street, S.W.,
Washington, D.C.
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Re: Comments on ET Docket No. 10-167

1. As a contributor to the original Part 15 UWB decision making process, a founder of GPRIC (ground penetrating radar industry consortium) formed to communicate with FCC in 2000, and as an advocate for the GPR community, the following comments focus on placing the current waiver request in context.

2. The goal of current Part 15 UWB regulation is to permit safe operation of such devices without causing interference with critical services. The UWB devices addressed have unique character and require emissions testing based on that unique character. These characteristics were implicit in the original rule-making.

    a. UWB devices as considered for current Part 15 rules emit a stream of impulsive signals that contain frequencies spanning very wide bandwidths but appear noise like to more traditional narrow-band receiving devices. The rules were **not** crafted to address frequency hopping or sweeping devices that might be capable of emitting over a wide frequency range but only emitted in a narrow band at a given time.

    b. The application of 'instantaneous' to the term 'fractional bandwidth' had the specific purpose of indicating that all frequencies in the defined band were emitted **concurrently**. In essence, this is a manner of indicating that the emitted signals are impulsive or transient like.

    c. A specific value set for fractional bandwidth was difficult to select. Fractional bandwidth values of 0.2 to 0.5 were debated at the time but this meant devices operating above 2500 MHz required bandwidths in excess of 500 MHz which was deemed onerous. The resulting rule-making was a compromise requiring instantaneous fractional bandwidth as defined in section 15.503(d) to be > 0.2 or the UWB bandwidth > 500 MHz.

d. Since the duty cycle and PRF of impulsive emissions could be varied, average emissions had to be measured in the worst-case situation of maximum duty cycle and PRF. This is reflected in the 15.521(d) average emissions requirement.

3. Examining the current waiver request in the above context, leads to the following comments.

    a. The device for which the waiver is requested steps or hops about the spectrum emitting in a narrow bandwidth at any specific time. While the range of frequencies that can be spanned is wide, the device does not remotely resemble a UWB device as contemplated by the current Part 15.

    b. Granting a waiver to Part 15.503(d) opens the doors to any device that can emit over a wide frequency range but can selectively choose to emit in a specific narrow band indefinitely. This was not the intent in the crafting of the current Part 15 UWB rules. The emissions levels defined for Part 15 UWB devices are not likely to be appropriate in many instances.

    c. Granting a waiver to 15.521(d) based on the arguments set forth is not appropriate. If the emitted frequencies can be selected, it is possible to tailor the emissions to avoid forbidden bands and adjust emissions in sensitive spectral ranges obviating the need for a waiver request. Such an option is not available for the devices envisioned under part 15 UWB rules which **must emit** across their entire bandwidth **concurrently**.

    d. A corollary to granting a waiver to 15.521(d) would be to permit current UWB devices to request a waiver to use a 'typical operation' duty cycle or PRF rather than the worst case as proscribed now while carrying out the average measurements.

4. With respect to the arguments that the current device represents a major advantage over existing GPR devices is specious.

    a. Numerous multi-channel devices that align with the part 15 UWB rules already exist from several vendors addressing the same applications. A special 3D workshop at the GPR2010 International Conference in Lecce, Italy, June2010 show cased at least 5 systems capable of delivering similar results.

    b. The claims that this device is widely used in other jurisdictions leaving the US market at a disadvantage is also misleading since markets for such devices are still developing and multi-channel devices which conform with current Part 15 UWB rules are present in these jurisdictions also.

    c. The claim that the current device creates less interference potential because it covers more area in less time is also misleading. Modern UWB GPR devices do not emit continuously but adjust data acquisition rate (i.e.

PRF and/or duty cycle are based on data spatial density requirements and speed of platform movement) obviating this claim.

5. In summary:

    a. As a passionate advocate for GPR, the FCC should find the appropriate means to encourage use of this type of GPR device. This may be experimental licensing to start.

    b. The granting of a waiver to the parts of the current Part 15 UWB for UWB devices is not the appropriate way to enable use of this or similar GPR devices; further, granting a waiver on the grounds presented will open the door to a range of waiver requests of a similar nature.

    c. The emissions levels and testing procedures are currently premised on impulsive style UWB emissions that may be inappropriate for narrow bandwidth frequency hopping devices. (If waivers on the mode of use of the device as opposed to worst-case are granted for average emission testing, then the Commission may be required to modify rules for all UWB devices with regard to average emissions testing).

    d. A key point to be noted. Not all GPR devices are UWB devices in the context of Part 15, and similarly, not all UWB devices are GPRs.

Yours truly

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